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## 7. Appendix C: Transportation

### Introduction

The Southwest Waterfront Development Plan involves a number of actions that will affect transportation and circulation in the Southwest, including the removal of Water Street, the transformation of Maine Avenue into an urban boulevard, the creation of a Civic Park near the intersection of Maine Avenue and M Street, and the significant increase in density that will generate greater demands for parking. In addition to those actions affecting the circulation of cars, the Development Plan includes important enhancements to pedestrian and bicycle routes through the Southwest.

The following transportation chapter outlines the existing conditions of the transportation and circulation system in the Southwest, and then discusses the potential impacts of the development proposed in the Southwest Waterfront Development Plan on transportation in the neighborhood. Following the analysis of the impact of the Development Plan on transportation and circulation in the Southwest is a brief discussion of the Visitor and Transportation Center proposed in the AWI Southwest Waterfront Vision.

### Assessment of Existing Conditions

#### Streets and Highways

##### *Existing Street Network and Access Description*

Figure 7.C1, the Regional Access Diagram, places the Southwest Waterfront in the context of the regional highway system. Figure 7.C2 presents a functional classification of the surface street network the Southwest Waterfront Study Area. The street network in the Southwest Waterfront is largely dictated by the regional highway system, and is dominated by Interstate 395 and its ramp connections to 12th Street, 9th Street, and 7th Street.

Twelfth Street, 9th Street, and 7th Street are the site's primary north-south arterials because of their north-south continuity and their direct ramp access to Interstate 395. Maine Avenue and M Street are the principal east - west arterials in the Southwest, with the former paralleling the Waterfront and the latter connecting the neighborhood to the Southeast. Fourth Street is designated as a major collector street because it serves the neighborhoods in the eastern portion of the Southwest Waterfront area by collecting and distributing neighborhood traffic between local destinations and the principal arterials. There is currently an initiative to reconnect the portion of 4th Street that was closed for the development of Waterside Mall.

The streets designated as local streets in Figure 7.C2 primarily provide access to the abutting properties, and service only a small amount of traffic passing through the area. L'Enfant Promenade, Banneker Circle, and the roadway that links Banneker Circle to 9th Street are all designated as local streets. This designation is based on observation and traffic volume data indicating that this set of roadways carries very low traffic volumes and principally serves the L'Enfant Plaza development.

##### *Existing Conflict Points*

In general, the surface street network in the Southwest Waterfront is congested during weekday commuter peak periods and during weekend periods when activity is generated at the Fish Market and other existing waterfront venues. Congestion caused by visitors to waterfront venues creates difficulties in parking and in managing tour bus traffic.

Weekday commuter traffic congestion is typical within the city. A recent District Department of Transportation (DDOT) analysis of the intersection of 9th Street and Maine Avenue indicated that both the intersection and the 9th Street approach to I-395 are significantly congested during peak commuter periods. This is typical of major arterial intersections in the city during these periods.



FIGURE 7.C1  
*Regional Access Diagram*

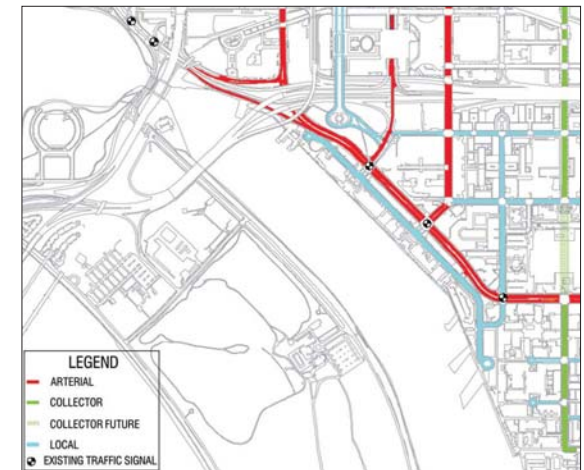


FIGURE 7.C2  
*Functional Classification of Existing Streets*

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## Public Transportation

### *Existing Metrorail and Metrobus Connections to the Waterfront*

Figure 7.C3 shows the location of the principal Metro bus stops and routes, and the two Metro rail stations that serve the Waterfront. The Waterfront has excellent public transportation service, with its proximity to the green, orange, and blue Metro lines. The Southwest is directly accessible from the new Convention Center site on the Green line, and easily accessible via Metro from the L'Enfant Metro station and the Waterside Mall Metro station. The walk between these nearby stations and the waterfront, however, is currently bleak and uninviting.

### *Tour and Charter Buses*

The large restaurants and the river cruise services on Southwest Waterfront are popular destinations for large numbers of tourists. Additionally, other tour and charter buses drop passengers off at the Mall and come to the Southwest Waterfront to park. For a fee, off-street parking is available for a limited number of buses serving the Southwest Waterfront, and some curb parking is set aside for the exclusive use of buses. Otherwise, tour and charter buses vie for legal (and illegal) parking.

The problems associated with tour and charter buses along the Southwest Waterfront are chronic throughout much of the District. A task force headed by the District Department of Transportation (DDOT) is currently working to address this issue, and the city is developing a management plan that will provide incentives for bus drivers to unload passengers and immediately drive to designated bus parking facilities. At these facilities, the bus drivers can be contacted by their tour groups when it is time for them to return to the waterfront to pick up their passengers. In the meantime, however, a significant number of tour and charter buses sit idling on Maine Avenue for extended periods of time.

### *Existing Bicycle Access*

There is currently no formal bicycle route through the Southwest. Cyclists can ride on the waterfront promenade, but the narrow area is often further restricted by outdoor restaurant seating, and cycling on Maine Avenue during peak traffic hours without designated bicycle lanes can be dangerous due to the high speed of automobile traffic and restricted space.

### *Existing Pedestrian Access*

The 10th Street Overlook, as it exists today, is essentially cut off from the rest of the Southwest Waterfront. The steep drop from the Overlook to Maine Avenue creates a geographical barrier between the L'Enfant promenade and the Waterfront. In order to safely cross Maine Avenue from the 10th Street Overlook, pedestrians must walk down a ramp to 9th Street and then cross Maine Avenue at the traffic signal. There is a sidewalk on the south side of Maine Avenue, but no continuous sidewalk access leading to Maine Avenue or along the north side of the street. The sidewalk on the south side of Maine Avenue narrows significantly underneath the Case Bridge. The existing waterfront promenade is underused, and provides limited pedestrian access to the waterfront.

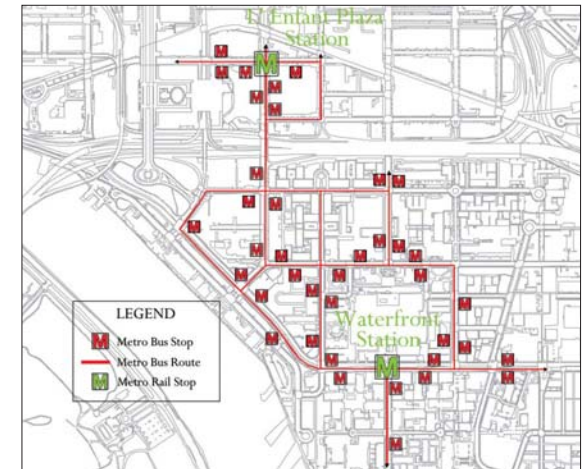


FIGURE 7.C3  
*Existing Public Transit Connections*

**DRAFT****Existing Parking****Existing Locations**

On-street and off-street parking in the Southwest Waterfront serves several maritime-oriented uses including marinas and cruise ship operations, and several restaurants and hotels. These sites are arrayed along the water's edge of the Washington Channel from 6th Street to the Tidal Basin. All of these sites are presently accessed exclusively via Water Street with the exception of the Washington Marina and the Municipal Fish Market, which also have driveways directly on Maine Avenue.

Other properties, including Arena Stage, several small office buildings, and numerous apartment and townhouse residential properties located along the north side of Maine Avenue and along 6th Street utilize a combination of off-street and on-street parking.

On street curb parking is available throughout the Southwest Waterfront on most streets, except in locations where it is prohibited for traffic movement and safety reasons. Automobile parking is provided at spaces with parking meters which limit parking to two to four hours depending on the location. On many street segments, parking is not metered, but is restricted by the District of Columbia residential parking permit system, which limits parking to two or four hours except to residents of Ward 6.

**Existing Conflict Points**

There are a few important parking problems on the Southwest Waterfront project area. The demand for parking at Arena Stage also far outstrips its supply. The management of Arena Stage is working with its neighbors on a shared parking plan that will allow Arena Stage patrons to find abundant parking on evenings and weekends in nearby off-street office and retail parking facilities. Tour and charter bus parking is also a problem in the site area, which is of great concern to local residents. This is a chronic citywide problem that must be addressed by the District as a whole through better bus management practices and tour bus facilities. Another problem resulting from limited parking that must be addressed in the Development plan is the congestion that occurs on weekends and during peak tourist seasons while visitors to the waterfront search for parking.

**Existing Off-street Parking Inventory**

In October 2001, the District of Columbia Department of Housing and Community Development (DHCD) completed a detailed inventory of existing off-street parking serving the Washington Marina and the Municipal Fish Wharf. This inventory indicates an existing supply of 198 off-street parking spaces.

There are ten additional off-street parking facilities that serve the Waterfront development, all of which are accessed from Water Street. These facilities provide for the employees, patrons and guests of the Waterfront businesses but are also open to the general public.

Off-street parking was not inventoried at properties north of Maine Avenue or along 6th Street because these properties will not be directly impacted by the Southwest Waterfront redevelopment plan. However, plans for the redevelopment of Arena Stage are underway that will address the problem of very limited patron parking at that facility.

**Existing On-street Parking Inventory**

On-street parking along Water Street will be directly impacted by the Southwest Waterfront redevelopment plan. All of the parking along Water Street is metered with a 2-hour time limit. The total number of spaces along the street, and including the two cul-de-sacs at either end of the street, is 159 spaces.

**Existing Users and Demand.**

A detailed demand study has not been carried out for the entire waterfront area. However, small area studies and observations provide an overview of the current demand patterns:

- On-street parking is not under-utilized on weekdays and during the tourist off-season on all streets except Maine Avenue and Water Street between 9th Street and Arena Stage. On most weekends, and on all days during the peak seasons, on-street parking is fully utilized.
- Off-street parking that serves the existing buildings is well-utilized at all times, and is inadequate during the peak seasons. In addition to being utilized by patrons and employees of local businesses, Arena Stage, and Waterside Mall, a small portion of the off-street parking in the neighborhood is leased monthly to commuters and used during weekdays by office workers employed at sites north of the waterfront.

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## Transportation Implications of the Development Plan

### Impact of Altered Street Patterns

#### Elimination of Water Street

As outlined in Chapter 4, the first and most logical step to using the Waterfront's valuable land more efficiently is the elimination of Water Street. The redundancy of Water Street and Maine Avenue is unnecessary from a traffic standpoint. Eliminating Water Street will allow Maine Avenue to function as the Waterfront's main artery, but should not contribute to Maine Avenue becoming a high-speed traffic thoroughfare. The addition of pedestrian crossings and the greening of the median of Maine Avenue will contribute to it becoming a pedestrian-friendly urban boulevard.

#### New Signals on Maine Avenue

In the Southwest Waterfront Development Plan, Maine Avenue will be reconfigured as an urban boulevard with signalized intersections at one block spacing through the waterfront area. These signalized intersections will provide for traffic turning movements to the north-south cross streets and into the major driveways that provide access to the waterfront development and parking garages. The signalized intersections will also provide for multiple locations for safe crossings for pedestrians. This reconfiguration of Maine Avenue will change its character from a suburban-like arterial street that is conducive to high-speed traffic to an urban boulevard where pedestrian traffic, bicycles, and motor vehicle traffic can safely coexist.

Maine Avenue will continue to carry high volumes of local and commuter traffic. It will function as an urban arterial boulevard with traffic-carrying characteristics similar to other major arterials in the city. Average daily traffic on Maine Avenue will be similar to other arterial boulevards in Washington, such as Connecticut Avenue, Massachusetts Avenue, and Wisconsin Avenue, as depicted in Figure 7.C4. These comparable streets are all six lanes wide and have similar traffic signal spacing and pedestrian activity to what is proposed in the Development Plan for Maine Avenue. The additional traffic signals on Maine Avenue will not affect its capacity to handle the traffic loads; instead, traffic will operate at lower speeds more appropriate to this neighborhood.

#### New Cul-de-Sac Access Roads

The proposed plan will replace the eliminated Water Street with roadway connections to the waterfront that are perpendicular to the water's edge and are located at signalized intersections along Maine Avenue. These cul-de-sac style access roads are located at 7th and 9th Streets and across from the access road at Arena Stage.

Lateral movement by motor vehicles along the waterfront will take place on Maine Avenue. A motorist destined to a waterfront location will arrive at Maine Avenue, traverse the avenue to the signalized access point that serves his destination, and turn down toward the water to find parking.

Within the new waterfront development, on-site circulation, parking facilities, and truck loading facilities will be integrated to permit for some vehicular movement, but traffic and excessive pavement will no longer dominate the waterfront as it does today.

The additional parking facilities proposed in the Development Plan and AWI Vision are on the south side of Maine Avenue, underneath the proposed development sites. These garages would be accessed from the service driveways proposed between each of the development sites. Each service driveway would intersect Maine Avenue at a signalized intersection, as is depicted in Figure 7.C5.

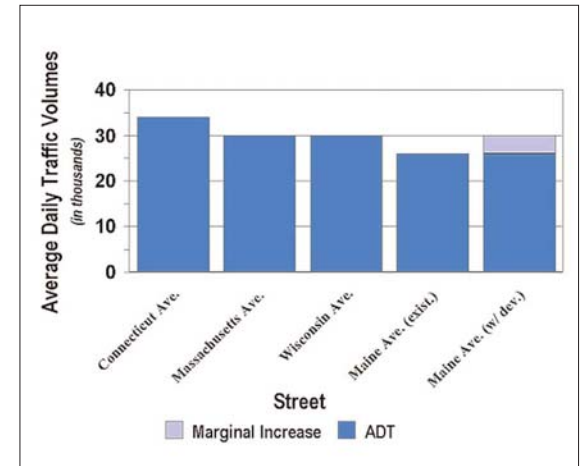


FIGURE 7.C4  
Maine Avenue Traffic Comparison

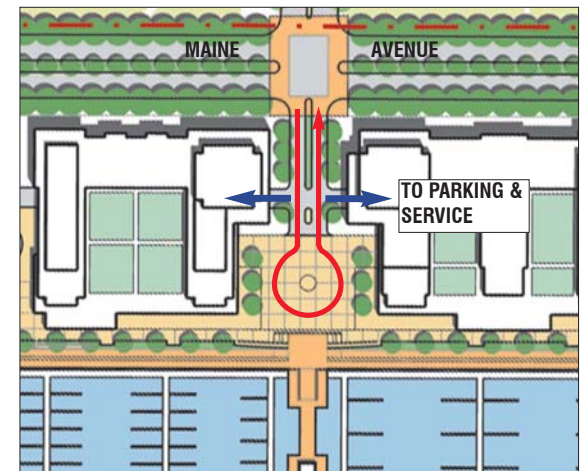


FIGURE 7.C5  
Diagram of Cul-de-Sac Access

**DRAFT****Impact of Proposed Density****Trip Generation**

The proposed plan for the Southwest Waterfront will intensify the density of usage along the Waterfront. In addition to existing uses, new restaurant and retail sites will be created. It is likely that the restaurants will both continue to cater to tourist traffic and become destinations for residents and workers in the neighborhood and the metropolitan area.

The retail portion of the development will include stores that will provide convenience shopping for nearby residents. Other stores could draw from a larger geographic area but the peak traffic for this category of stores would occur on evenings and weekends. The proposed hotel will generate low traffic volume but will have taxi-stacking requirements in the immediate area.

A significant number of new residential units are proposed along the waterfront. In general, apartments within the core area of the city do not generate significant commuter peak period traffic. Although the residents of these apartments own automobiles, they often do not use them for commuting, because walking to work, using Metro, bus, and/or rail are significantly more convenient and less expensive.

A museum or cultural site is proposed for Site 5. Museums in the city do not generate significant traffic and parking demand but do draw high volumes of pedestrians, and can generate significant tour bus traffic.

It is anticipated that the increased density on the waterfront, and the presence of additional retail, new restaurants, and a museum will make the waterfront a more significant destination than it currently is. A comparison between the estimated increase in weekday traffic generated by the proposed development and the existing traffic on Maine Avenue demonstrates that the Southwest neighborhood has the capacity to accommodate a well-managed increase in traffic at the scale that will likely accompany the proposed development.

**Parking Supply**

The Southwest Waterfront Parking Plan has three principal components:

- First, there will be substantial below-grade parking and two-three stories of above-grade parking built into the core of the buildings proposed for Sites 1 through 5.
- Second, on-street curb parking along Maine Avenue will be maintained and expanded wherever possible. This convenient short-term parking is a major asset to the waterfront. During peak periods these lanes will operate as moving travel lanes.
- Third, a below-grade parking garage will be incorporated into the Civic Park at Site 6. This garage will service the cruise-ship operations during peak cruise periods, and will also serve other visitors to the Waterfront.

**Parking Demand**

The assumed demand for parking spaces in the District for new residential developments is between one and 1.2 stalls per residential unit. The assumed demand for parking spaces for new commercial developments is between one space per 500 commercial square feet and one space for 750 square feet (retail) to 1800 square feet (office). Assuming the lowest range of demand for parking stalls, the total demand created by the proposed development will be for 1,495 parking spaces; leaving a surplus of 575 parking spaces. Based on the current uses of the Channel, the plan will need to provide an additional 530 spaces to replace existing parking including water uses and on-street parking (see Table C2).

**TABLE C1  
Parking Ratios**

USE	PARKING RATIO
RETAIL	1 space per 750 square feet
OFFICE	1 space per 1800 square feet
CULTURAL	1 space per 750 square feet
HOTEL	0.5 space per room
RESIDENTIAL	1 space per dwelling unit

**TABLE C2  
Parking Supply and Demand from New and Existing Uses**

SITE	NEW PARKING SUPPLY	NEW PARKING DEMAND
1	316	369
2	484	348
3	409	219
4	518	297
5	103	262
6	240	0
<b>TOTALS</b>	<b>2,070</b>	<b>1,495</b>
<b>*REPLACE EXISTING PARKING</b>	<b>530</b>	
<b>SURPLUS</b>	<b>45</b>	

\* Parking for existing uses whose parking will be displaced after redevelopment, including Gangplank Marina, Capitol Yacht Club, St. Augustine's Church, and existing on-street parking.



**DRAFT****Bus Management**

Assuming the implementation of development schemes outlined in the Development Plan, the Southwest Waterfront will grow as an important destination for tourism. As this occurs, it will be crucial to reduce the congestion and environmental impacts of tour and charter bus traffic. Such a reduction will allow tour and charter buses to operate on the arterial streets in the Southwest Waterfront, but reduce their use of neighborhood streets for circulation and parking.

The management of tour and charter buses will be a crucial aspect of making the Southwest Waterfront a liveable place. In the proposed development, tour and charter buses should not be permitted to use access roads between Maine Avenue and the Waterfront except in special circumstances. The waterfront land is too valuable to accommodate bus parking and maneuvering. Similarly, tour and charter buses should not be permitted to park on Maine Avenue, but they may be permitted to load and unload passengers at select locations along Maine Avenue. Tour and charter buses should be required to park off-street either at other locations in the city designated by DDOT.

Should the Visitor and Transportation Center recommended in the AWI Southwest Waterfront Vision prove feasible, this will provide additional parking opportunities for tour and charter buses.

**Proposed Bicycle Facilities**

The Southwest Waterfront plan includes two bicycle routes: a commuter route along Maine Avenue, and a recreation route along the waterfront on the promenade. Through cyclists can use the class one bikeway along Maine Avenue to travel quickly through the area, and slower-moving recreational cyclists can use the promenade, where they will mingle with pedestrians. Cyclists on the promenade will typically dismount and walk during times of peak pedestrian activity.

An engineering study must be completed to develop the best scheme for accommodating the bicycle and pedestrian facilities under the Case Bridge. The ideal cross section of Maine Avenue through this area will accommodate two traffic lanes and a twelve-foot wide bike and walk way. For safety purposes, the cross section must also accommodate deceleration lanes at the existing driveway entrances to the Washington Marina parking lots. However, the existing dimensions of the cross section under the Case Bridge do not allow for this ideal cross section.

Alternatives for accommodating bicycle and pedestrian traffic under the Case Bridge could include:

- Reducing traffic lanes to ten or eleven feet;
- Cutting into the slope of the embankment adjacent to the lanes and constructing a retaining wall;
- Cantilevering the bike and walkway over the water; or
- Eliminating the curb cuts into the Marina at this location and providing all access through the Fish Market from the proposed plaza.

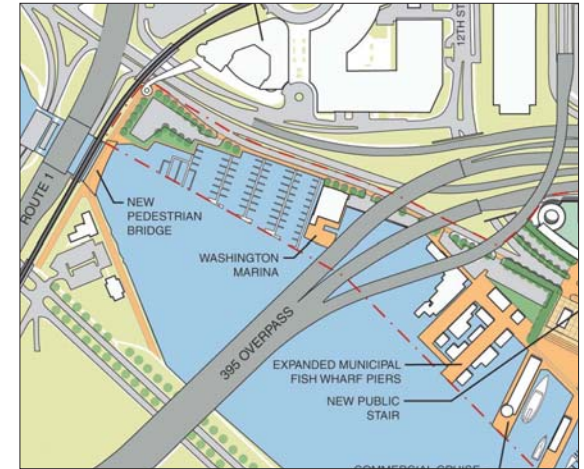


FIGURE 7.C6  
*Plan of Pedestrian/Trail Access Routes to Tidal Basin*

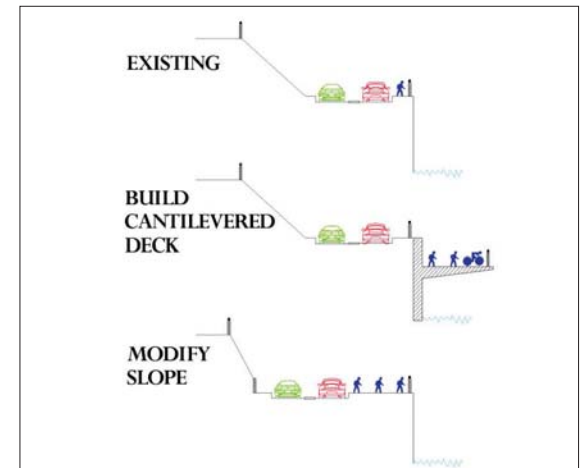


FIGURE 7.C7  
*Trail Options under the Case Bridge*



FIGURE 7.C8  
*Sidewalk under Highway 295 Ramps*



FIGURE 7.C9  
*Sidewalk along Washington Marina*



FIGURE 7.C10  
*Sidewalk under Railroad Bridge*

**DRAFT****Transportation Implications of AWI Vision****Visitor and Transportation Center****Access**

The 10th Street Overlook site has a number of ideal characteristics for an intermodal transportation center. The Visitor and Transportation Center recommended in the AWI Southwest Waterfront Vision would provide direct access to Interstate 395 and to Maine Avenue. Due to its accessibility to major regional routes, use of the proposed Visitor and Transportation Center would eliminate much of the traffic congesting local streets. The facility could park 1,200 automobiles, as outlined in Chapter 5, and could provide for bus passenger loading and bus parking. The 10th Street Overlook site is ideally situated as a public transportation hub, located one block from the Waterfront Metro Rail Station, accessed directly by Metro bus service, and near potential station for the proposed light rail system. It is also a short walk from the National Mall along L'Enfant Promenade.

The proposed Visitor and Transportation Center can be accessed directly from I-395 ramps at multiple entry points. Currently, there is a ramp leading from I-395 to 9th Street and 10th Street at the existing Banneker Park. This ramp does not carry a significant amount of traffic, according to a traffic count conducted at the I-395/9th Street ramp in Fall 2001. The use of the ramp was limited to 100 vehicles during the morning peak hour and 83 vehicles during the evening peak hour. In the AWI Vision, this ramp would be shifted slightly west in order to directly access the upper level garage of the Visitor and Transportation Center. The lower garage level would be accessed from Maine Avenue at the new signalized intersection just east of the Case Bridge. An additional garage access point would be at 9th Street.

The proposed facility will provide abundant automobile parking for commuters on weekdays and for visitors on weekdays, evenings, and weekends. Thus, rather than the current congested situation of visitors to the Fish Market and Marina trying to find parking in the limited surface facilities, abundant parking will be available directly across the street, by way of a safe pedestrian crossing at a new signalized intersection.

**Parking & Bus Facilities**

The District Department of Transportation's (DDOT) "Vision and Transportation Strategy for the Nation's Capital" adopted a concept for numerous municipal parking facilities that would provide convenient points to intercept motorists entering the city and allow them to park once and utilize public transportation to circulate through the city. The Southwest Waterfront was cited in these recommendations as a potential location for such a parking facility. These intermodal transportation facilities, such as that envisioned for the 10th Street Overlook site, will provide a number of benefits to improve traffic conditions in the District of Columbia:

- Easily accessible parking facility for motorists entering the city will enable them to park without having to traverse the congested city streets;
- Visitors will be able to access destinations throughout the downtown area, the National Mall, and along the city's waterfronts by using convenient public transportation;
- All-day, convenient parking will preclude motorists from having to move their cars from place to place and incur a number of parking fees;
- Facilities will provide services to visitors, commuters, and other users such as information and refreshment;
- Facilities will provide parking for charter and tour buses, allowing tourists and other visitors to the city to enjoy the same benefits as local motorists, and thereby reducing bus traffic;
- Comfortable accommodations for bus drivers and communication capabilities between drivers' tour groups and drivers will allow drivers to wait for passengers away from congested areas.

During evenings and on weekends, these parking spaces would be available to serve the activities and land uses on the waterfront.

**Alternative Transportation Center Sites**

In the early stages of the planning process, the consultant team identified three alternative sites for an intermodal transportation center in the vicinity of the Southwest Waterfront. Each site was evaluated on key characteristics such as: parking capacity, ability to provide for bus parking, access characteristics, the need for a shuttle bus to link the facility to the waterfront, and the pedestrian accessibility of the facility to the waterfront and other destinations.

One potential parking location the team considered was Jefferson Junior High School, at 801 7th Street, where an approximately 400-car parking garage could be developed under the existing playing fields. This below-grade structure could not accommodate buses. Access would have some neighborhood traffic impact because the access points would be on L Street and Seventh Street. Pedestrian access is fair; the site is one block from the waterfront and two or three blocks from the National Mall.

Alternatively, the provision of a major parking structure in East Potomac Park is physically feasible. This site has good interstate access, but it is relatively far from Southwest Waterfront destinations and would require the commitment of continuous shuttle bus or water taxi services.

If none of these sites prove feasible, a fourth alternative would be to use the existing L'Enfant Center Parking Facility for waterfront evening and weekend peak demand periods. The L'Enfant Center Garages are used primarily by commuters, and therefore are vacant during evenings and weekends. This alternative is immediately feasible. The primary drawback of the long-term use of this facility is its distance from the waterfront, which would require a connector shuttle bus or moving sidewalk system to bring people to the Channel.